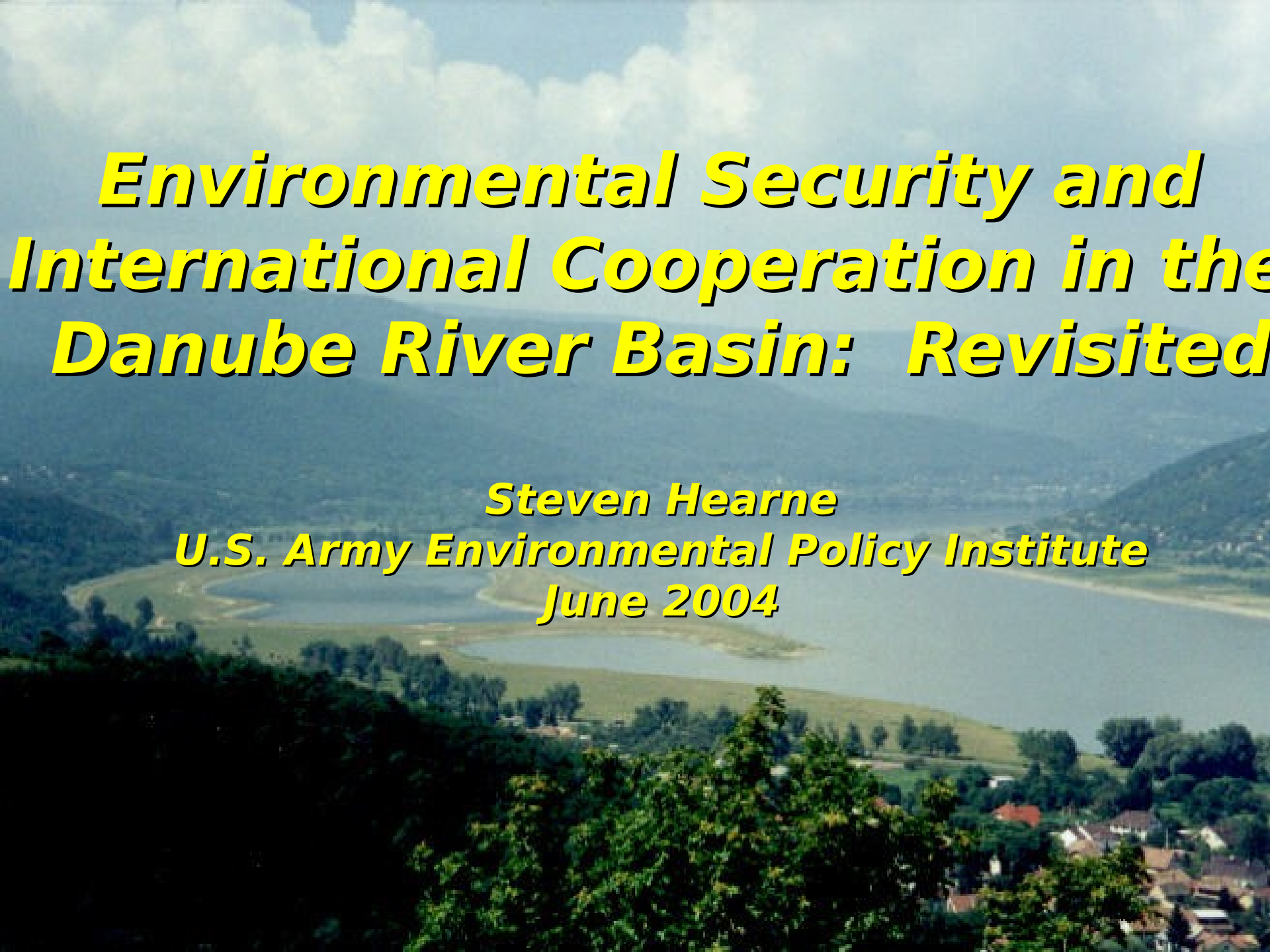


Environmental Security and International Cooperation in the Danube River Basin: Revisited

Steven Hearne
U.S. Army Environmental Policy Institute
June 2004

AEPI Mission

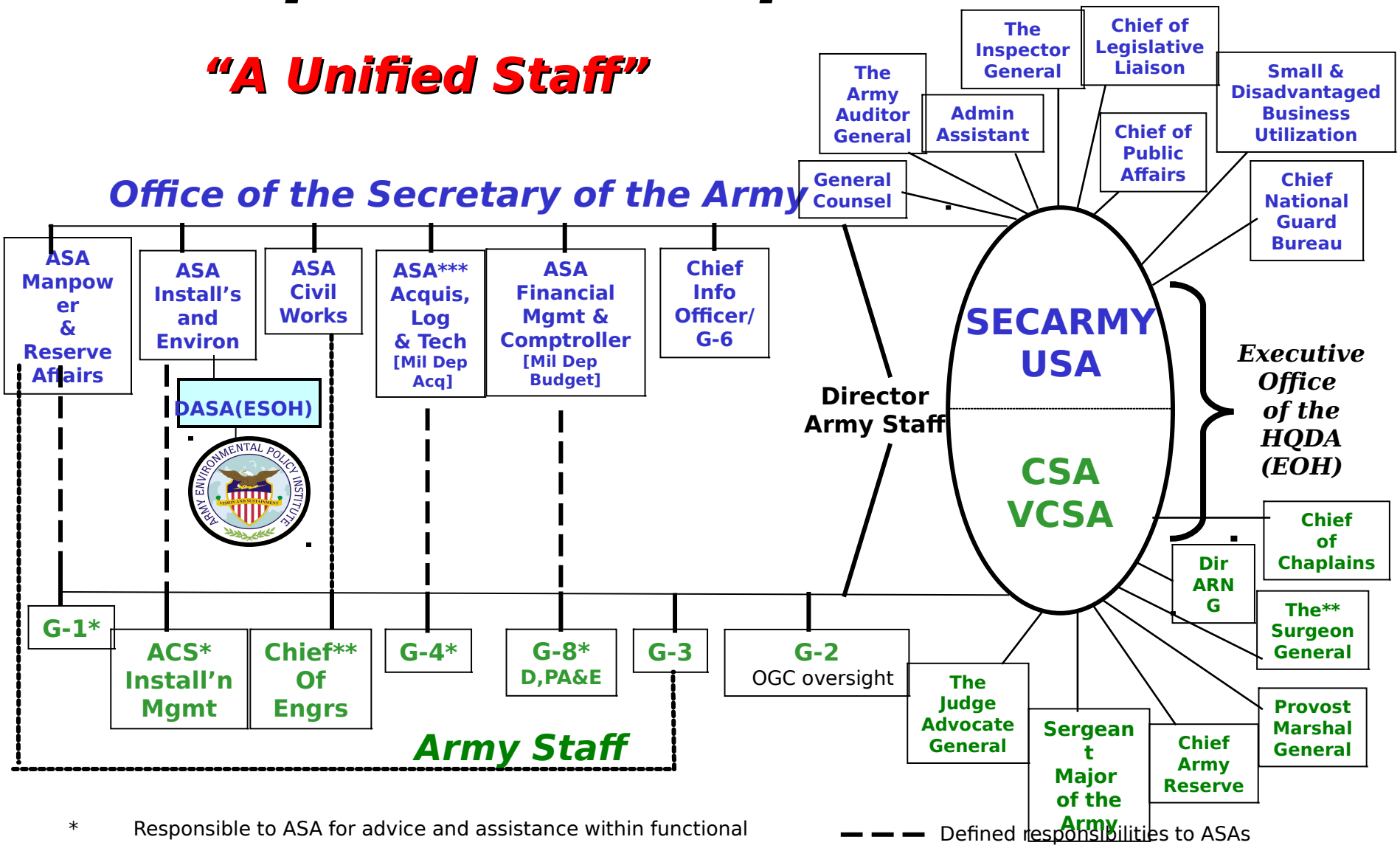
The mission of the Army Environmental Policy Institute (AEPI) is to assist the Army Secretariat in the development of proactive policies and strategies to address environmental, safety, and occupational health issues that may have significant future impacts on the Army

Brigade Centric-Stryker

Army at War … an Army in Transition … the Future Fo

Headquarters, Department of the

"A Unified Staff"



* Responsible to ASA for advice and assistance within functional area

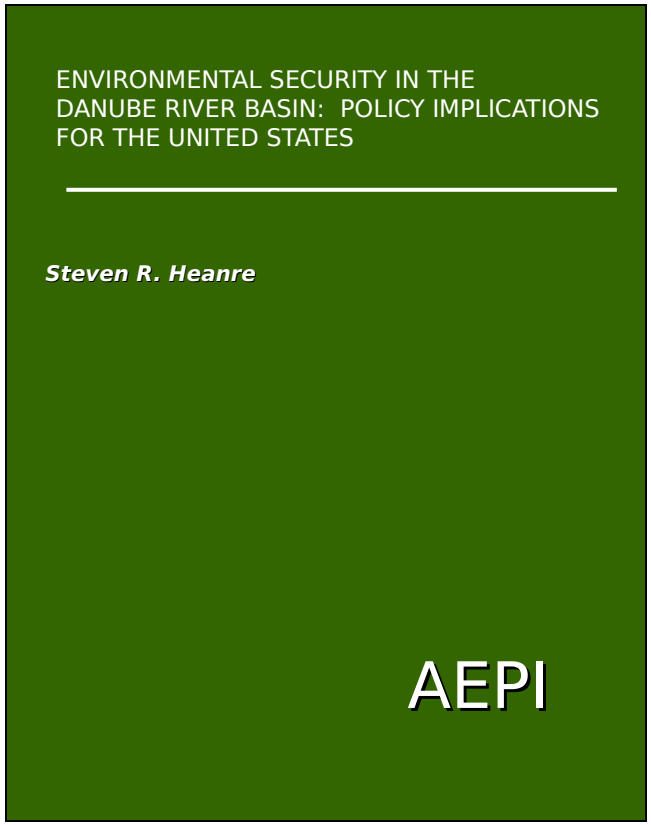
** MACOM commanders

*** Army Acquisition Executive

— — — Defined responsibilities to ASAs

---------- Oversight

Independent Research - ‘98 to ‘99



http://www.aepi.army.mil

RESEARCH OBJECTIVE:

Examine the environmental security issues having the most likely potential to impact stability within the Danube River Basin ... and recommend areas for future policy consideration and emphasis.

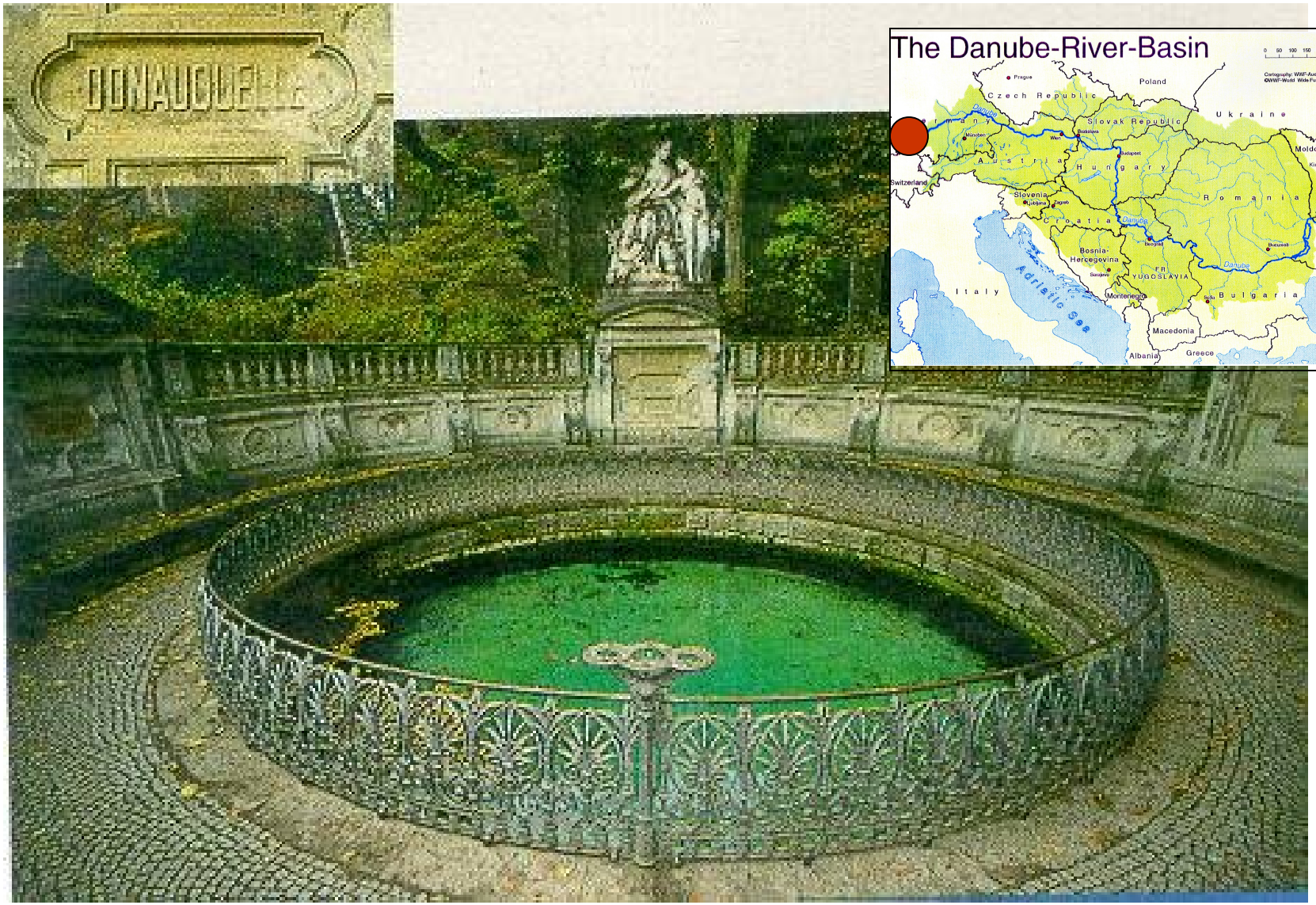
ACKNOWLEDGEMENTS:

- Danube Programme Coordination Unit (**DPCU**) - Vienna - interviews, reports
- World Wide Fund for Nature (**WWF**) - Vienna - interviews, information
- Regional Environmental Center (**REC**) - Szentendre, Hungary - research facilities
- **NATO School**, Oberammergau, Germany
- Institute for National Security Studies (**INSS**) - USAF Academy - limited stipend

The Danube-River-Basin

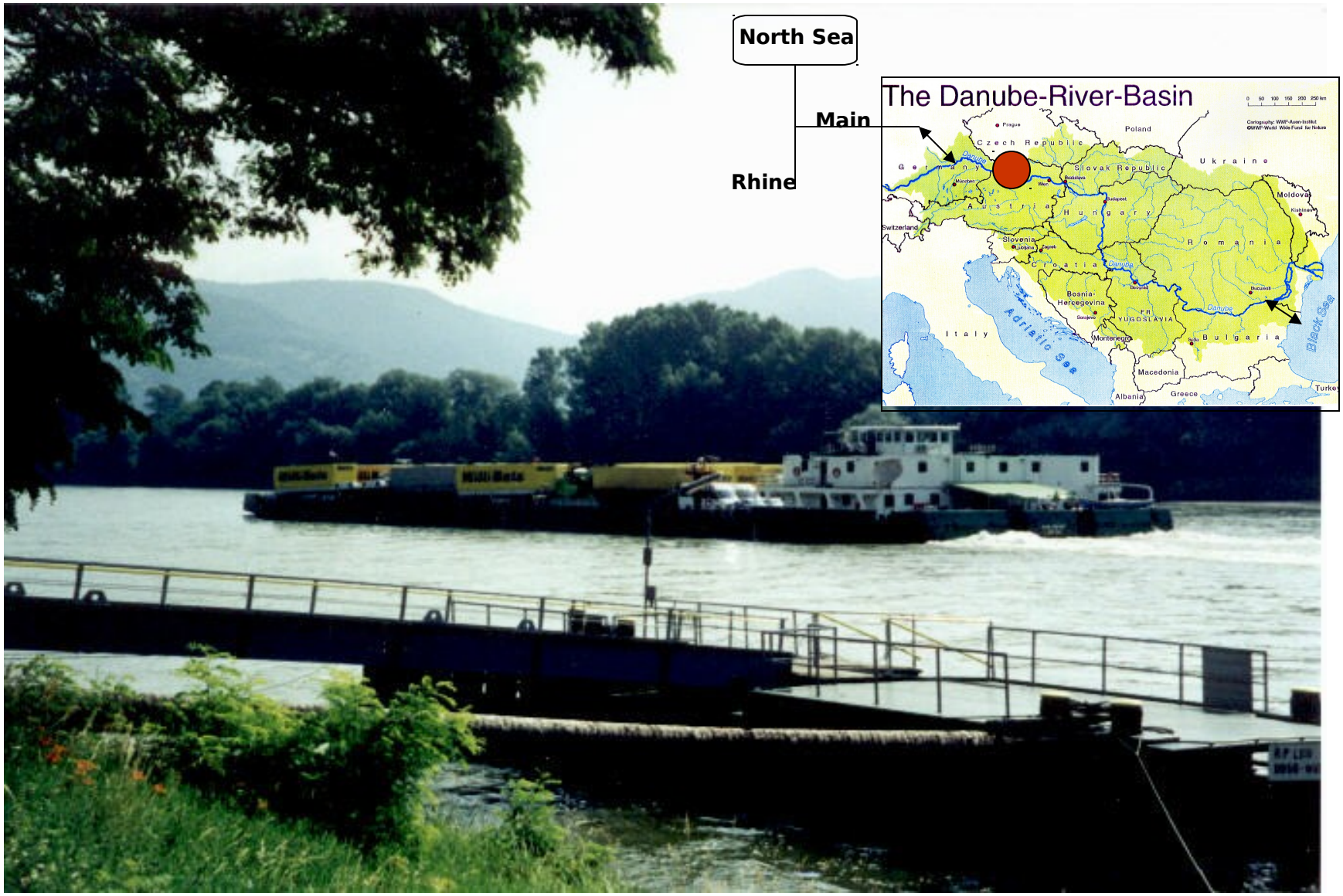
Source: World Wide Fund for Nature (WWF)

Source of Danube

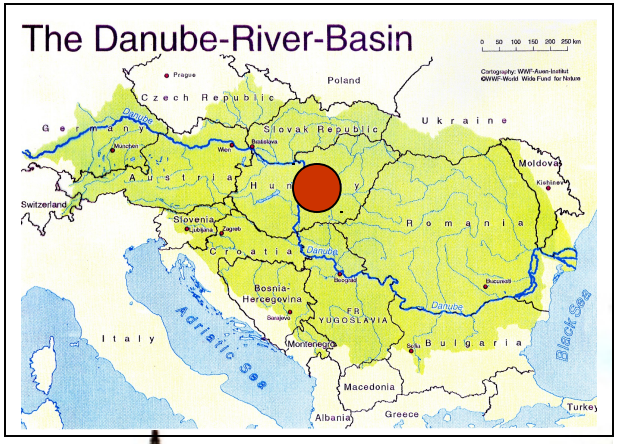


Source: A European Lifeline - Green Danube, World Wide Fund for Nature (WWF) Journal No. 3/June 1998

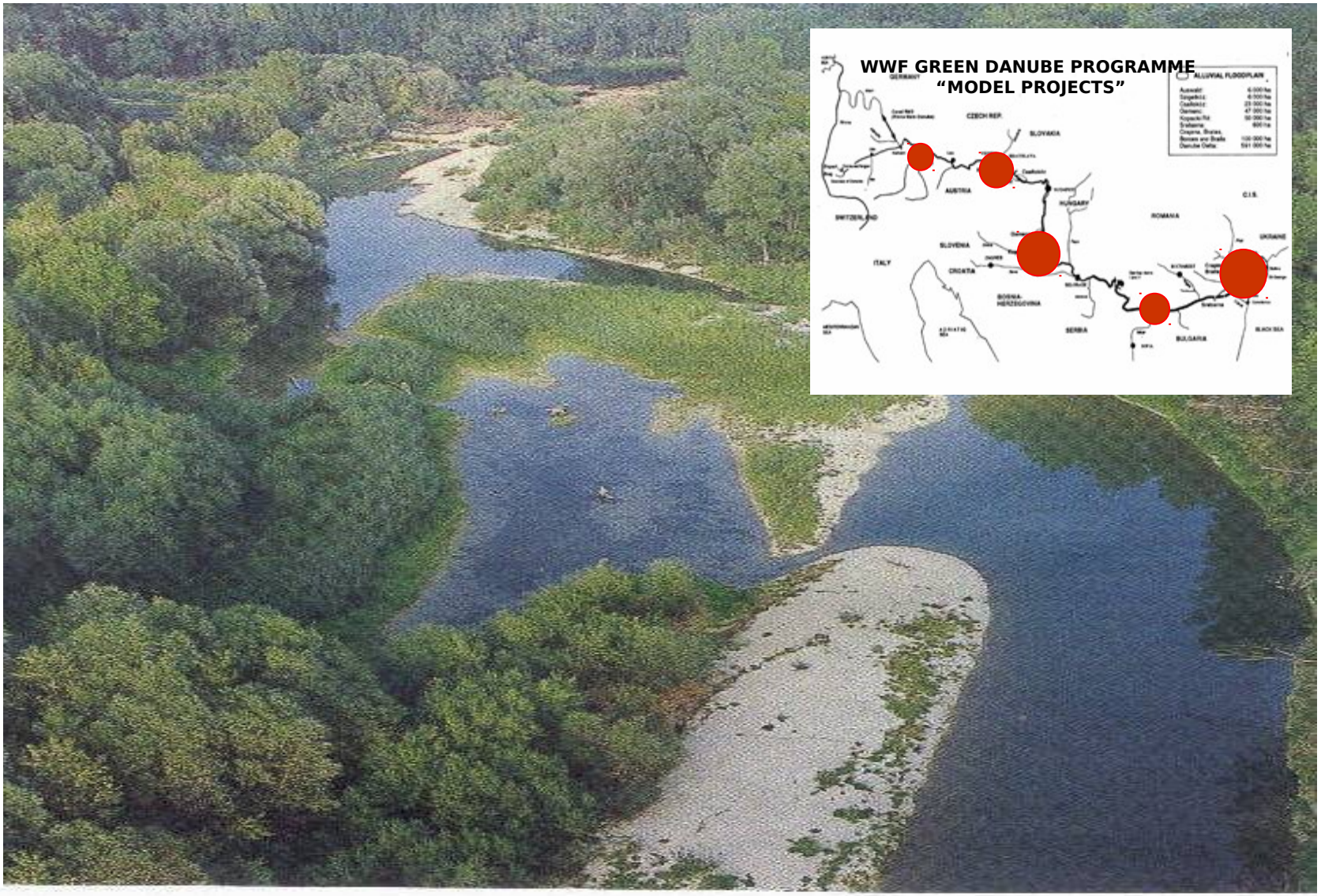
Waterways - Economic Arteries



Middle Region - Budapest

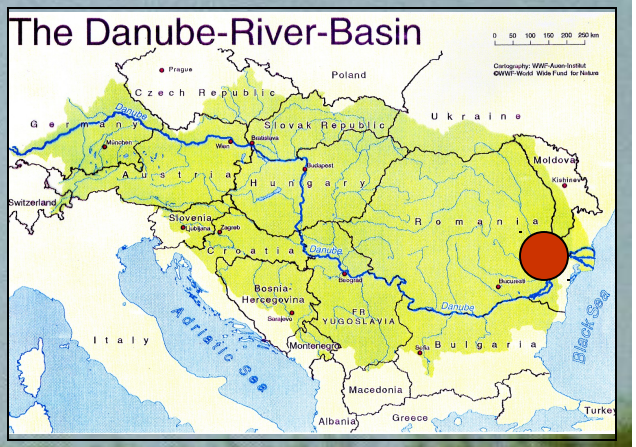


Alluvial Floodplains

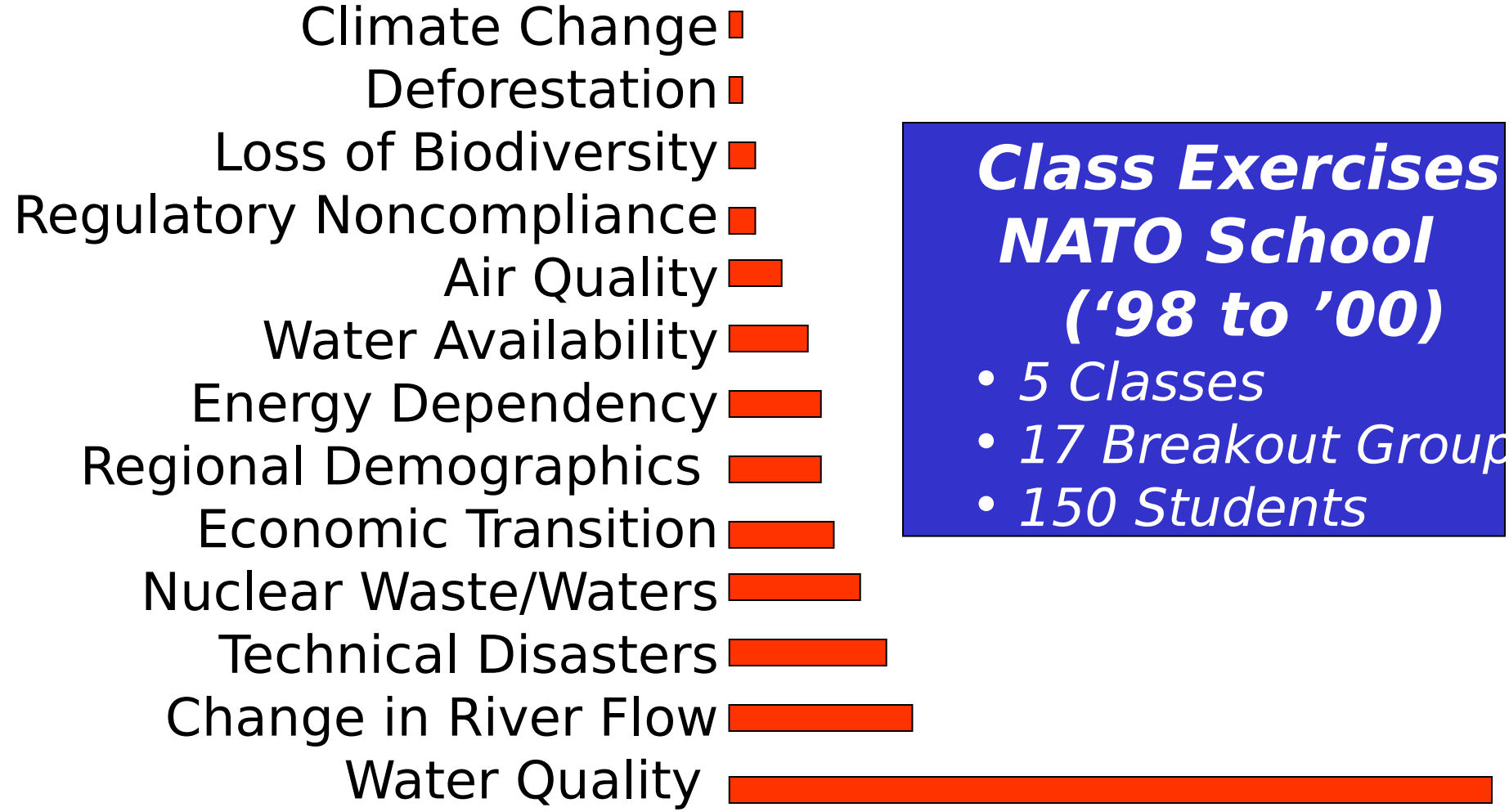


Source: A European Lifeline - Green Danube, World Wide Fund for Nature (WWF) Journal No. 3/June 1998

Danube Delta



Top Ranked Environmental Security Threats to Regional Stability

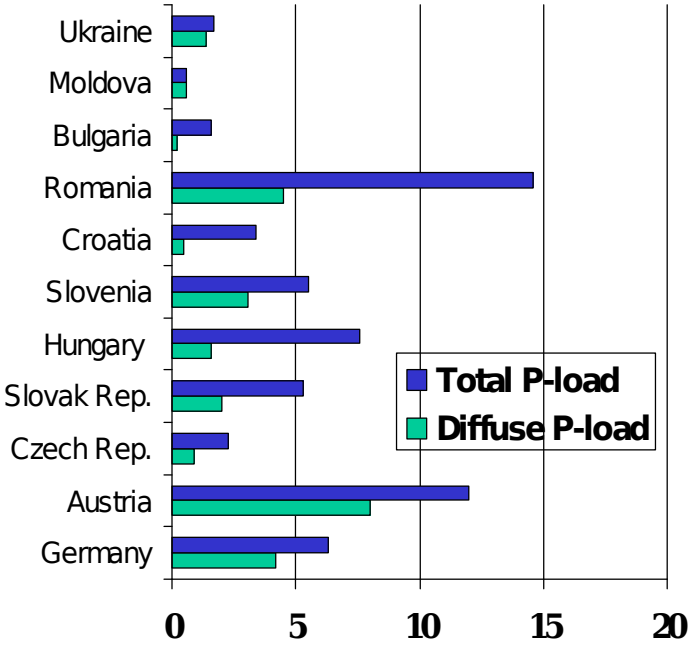


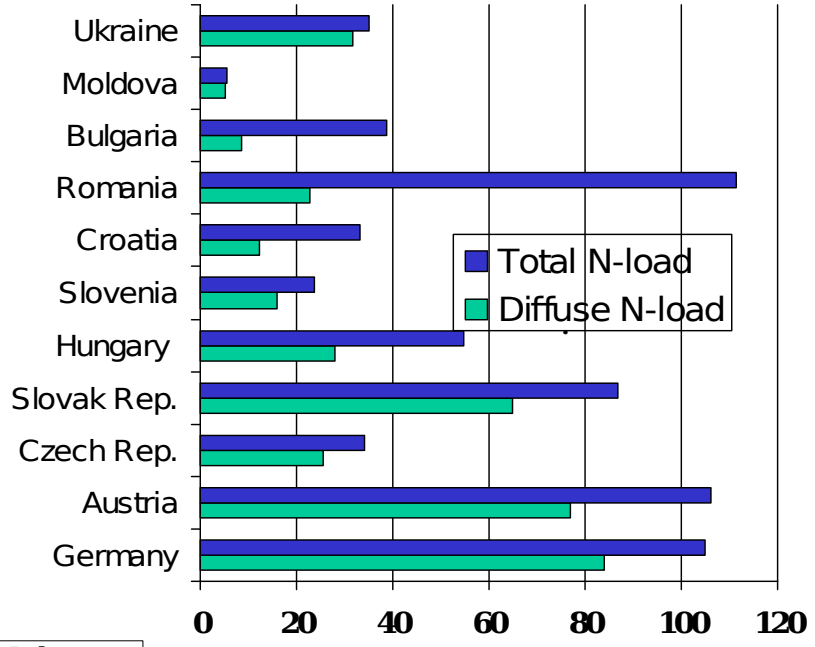
Class Exercises NATO School ('98 to '00)

- *5 Classes*
- *17 Breakout Group*
- *150 Students*

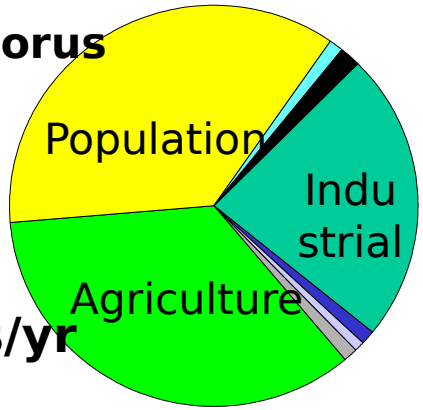
Nutrient Loading

kton/year into Surface Waters

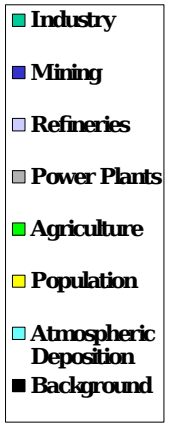




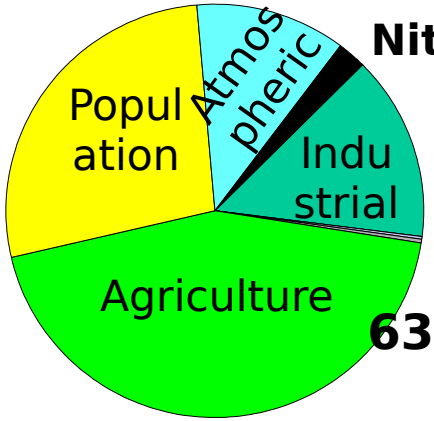
Phosphorus



60.9 ktons/yr



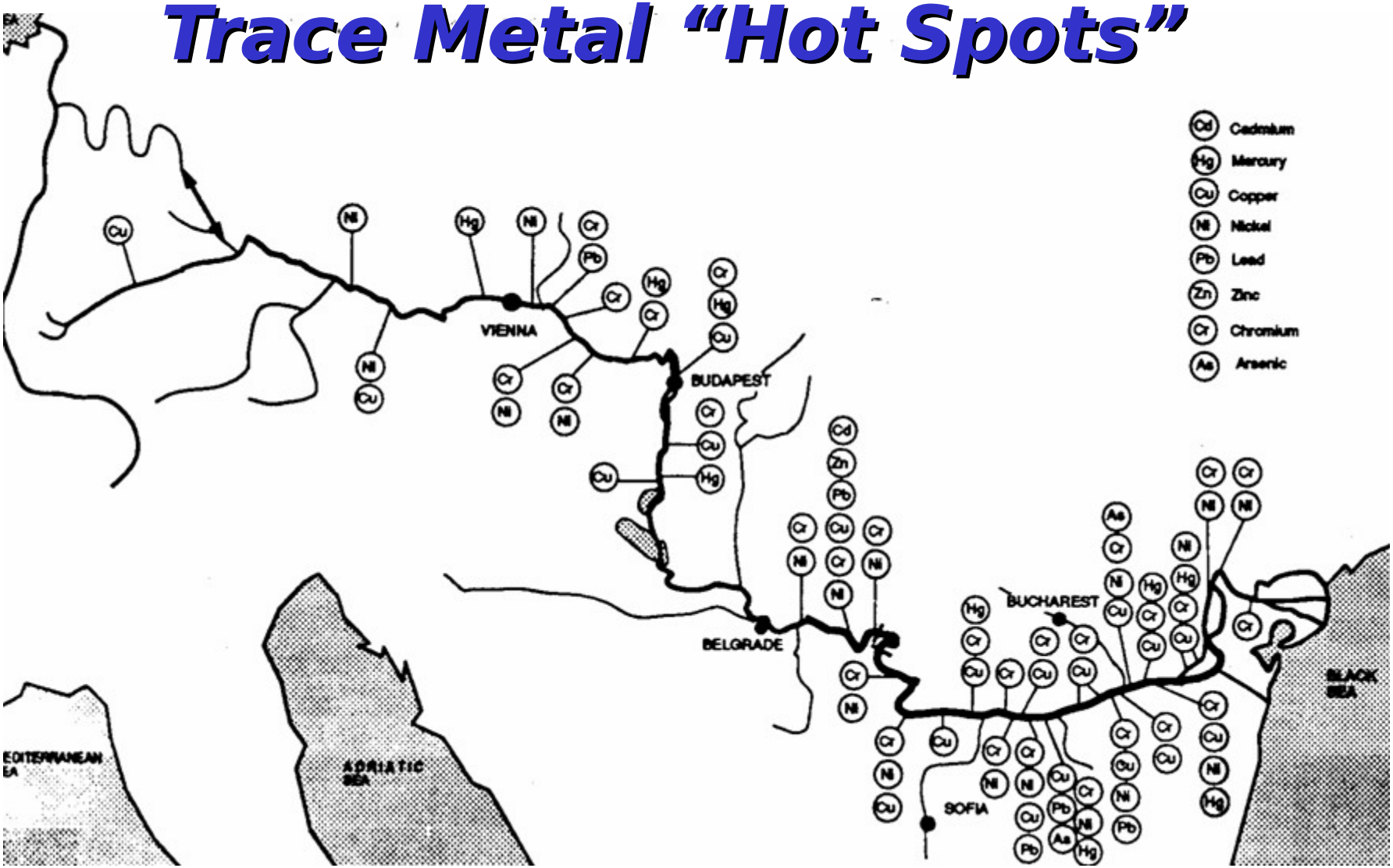
Nitrogen



634.5 ktons/yr

Source:
Danube Integrated Environmental Study, Report Phase 1, 1994, reproduced with permission of Haskoning Royal Dutch Consulting Engineers & Architects and Danube Programme Coordination Unit

Trace Metal "Hot Spots"



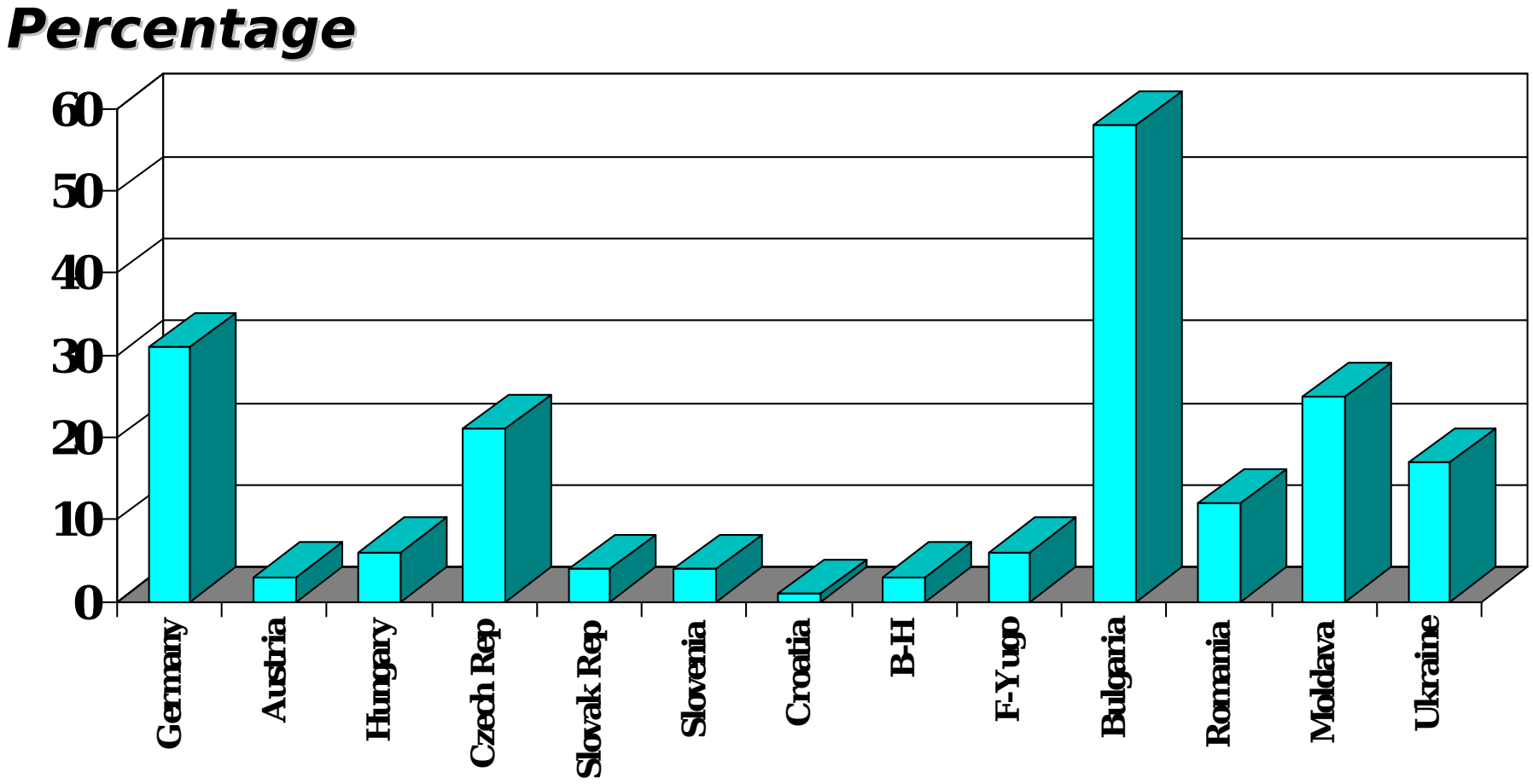
Source:
The Danube .. For Whom and For What? - Final Report to European Bank for Reconstruction and Development, Equipe Cousteau, 1993, reproduced by permission from Equipe Cousteau/The Cousteau Society

Technical Disaster

Cyanide Incident - Tisza

- **Jan/Feb 00 bird and fish kills**
  - 200 tons dead fish collected - Rivers
  - Total estimated fish kill 1300 t
- **Many drinking water intakes passed**
- **400 Hungarian otters killed**
- **Joint Australian-Romanian gold processing facility**
  - Heap-Leach Mine - $30M/10yrs - operating 9 months
  - 31 Jan 00 overflow dam- heavy rain/snow
  - EEA est. 100,000 m3 - 126 parts per million
- **UNEP (BTF 2nd phase) - emergency sampling of rivers**
  - Danube (FRY) levels not immediate threat to human health
- **US Army COE team - investigate reservoir and**

Water Withdrawal as % of Renewable Water Resources

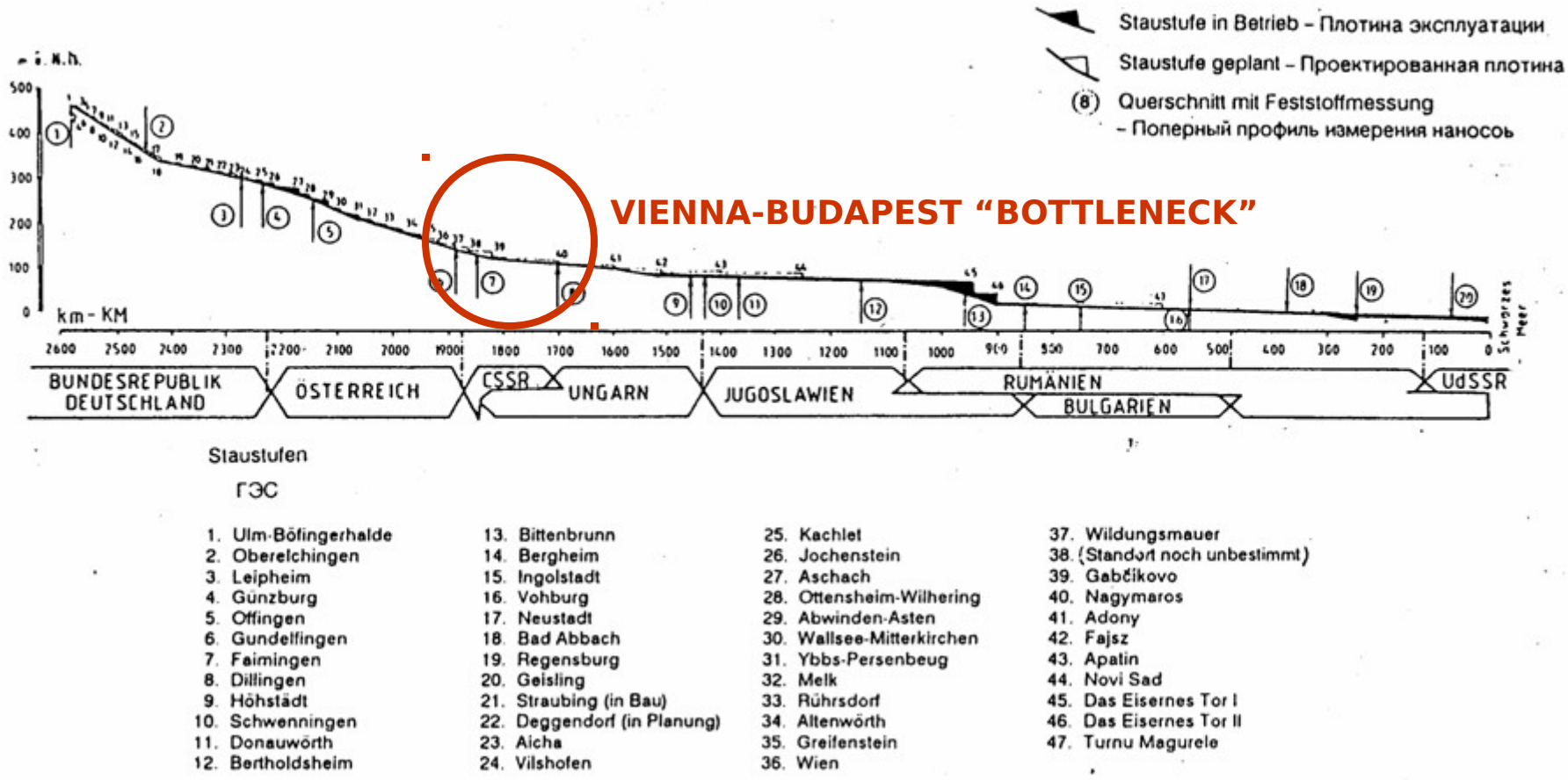


SOURCE: World Resources 2002-2004

Transport Facts and Figures

- **Volume of Bulk good shipped:**
  - 1987 (before Balkan War) - 100 Million metric tons; 30 in 1998
  - sand, and gravel for building and public works
  - iron and steel industry dependent on ore from Ukraine, etc.
  - Austria iron and steel industry at Linz - GNP and new canal ben
- **Important to local navigation of lower reaches**
- **River transport accounts for <2% of river polluti**
- **Advantages:**
  - noise; cleaner; fuel efficient; cheaper: $0.03 water; 0.09 rail; 0.
  - typical barge holds equivalent of 25 rail cars
  - single customs clearance
- **Disadvantages:**
  - transit time; malfunction of locks; low river levels; icing
  - only 1/2 of harbors for linking w/rail and road; harbors only @ 7

Dams and Locks - Danube Main Stem



er 47 dams and hydroelectric plants, navigation locks, and hydraulic structures on main st

Gabcikovo-Nagymaros Project

FIGURE 3A: GABCIKOVO-NAGYMAROS PROJECT (GNP)
[Source: Pearce, 1992]

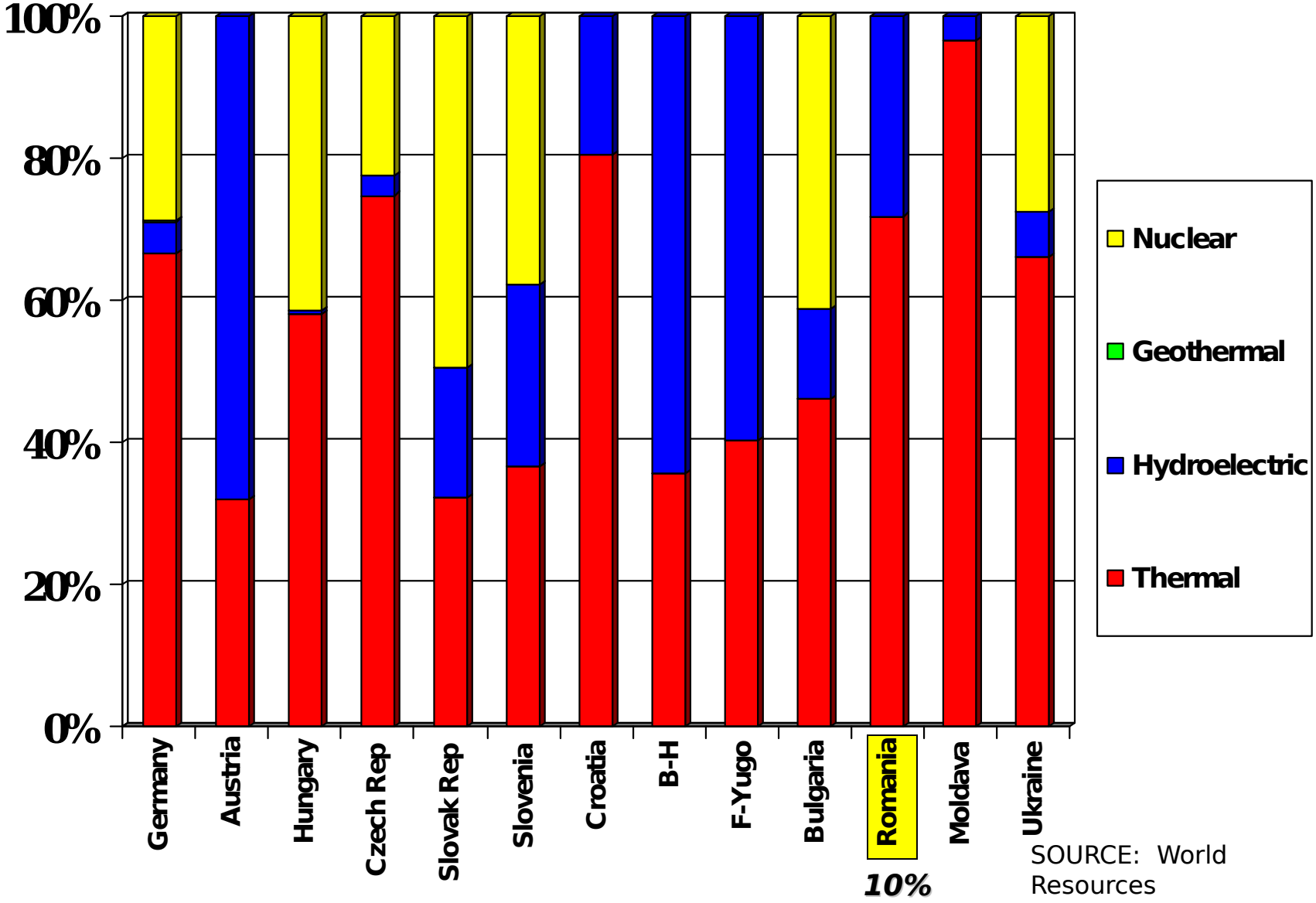
FIGURE 3B: GABCIKOVO PORTION OF GNP
[Source: Pearce, 1994b]

Gabcikovo Dam
Hydroelectric Plant

- **1977 Treaty between Hungary and Czechoslovak**
- **Original scheme - small hydro plant at Nagymoro**
- **Hungary terminated construction 1989**
  - Hungarian wetland deprived of water + concentrate pollutants
  - Catalyst - energized public protests against totalitarian regime
- **Slovakia pursued "C-variant" of original plant**
  - Extended length of diversion canal by additional 9 km
  - Reduced operating capacity from 780 to 180 megawatt
  - Both sides of canal are within Slovakia's border
- **1993 - Case to International Court of Justice (ICJ)**
- **1997 - International Court Justice non-appeal de**
  - Both parties ordered to renegotiate joint operation of dam sys
  - Respect current env standards and compensate each for dama
- **No satisfying solutions: loans & dam ops < inco**

Electrical Production

million kilowatt-hour - 1995



10%

SOURCE: World Resources 1998-1999

Nuclear Power Plants - Danube Basi

Nuclear Safety and EU Enlargement

Countries	Location	Reactor Number	Reactor Type (1)	Net Output (MegaWatts) (1)(2)	Commercial Start (1)(2)	International Safety Levels (3)
Hungary	Paks	1	VVER-440/213	440	1982	Upgradable
	Paks	2	VVER-440/213	450	1884	Upgradable
	Paks	3-4	VVER-440/213	460	1986/87	Upgradable
Czech Republic	Dukovany	1-4	VVER-440/213	440	1985/86/86/87	Upgradable
	Temelin	1-2	VVER-1000	910	2000-2001 (est.)	Upgradable
Slovak Republic	Bohunice	1-2	VVER-440/230	430	1978/80	Shutdown '06-'08
	Bohunice	3-4	VVER-440/213	430	1984/85	Upgradable
	Mochovce	1	VVER-440/213	440	1998	Upgradable
	Mochovce	2-4	VVER-440/213	440	2000	Upgradable
Bulgaria	Kozluduy	1-2	VVER-440/230	400	1974/75	Shutdown '05+
	Kozluduy	3-4	VVER-440/230	400	1981/82	Shutdown '10+
	Kozluduy	5-6	VVER-1000	910	1988/93	Upgradable
Romania	Cernavoda	1			1999 (est.)	Canadian Design
	Cernavoda	2			Under Construction	Canadian Design

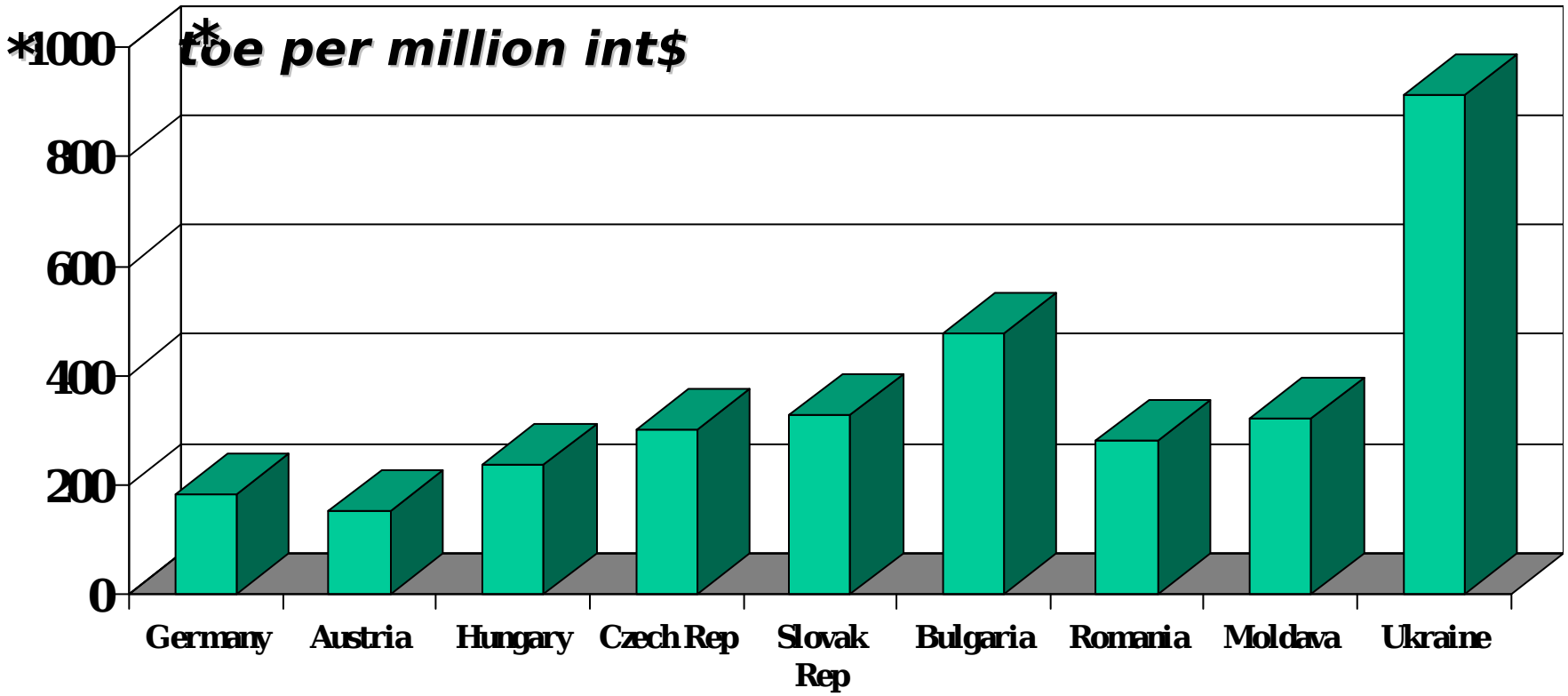
Sources:

) Extrabudgetary Programme on the Safety of WWER and RBMK Nuclear Power Plants, International Atomic Energy Agency (IAEA), obtained from IAEA Web Page - 27 Aug 98

) The Danube..For Whom and For What? - Final Report to European Bank for Reconstruction and Development, Equipe Cousteau, 1 adapted by permission from Equipe Cousteau/The Cousteau Society

http:///europa.eu.int/comm/external_relations/nuclear_safety [Nuclear Safety in Central Europe - Progress by Candidate States, 20

Energy Intensity
Consumption per GDP PPP -1999

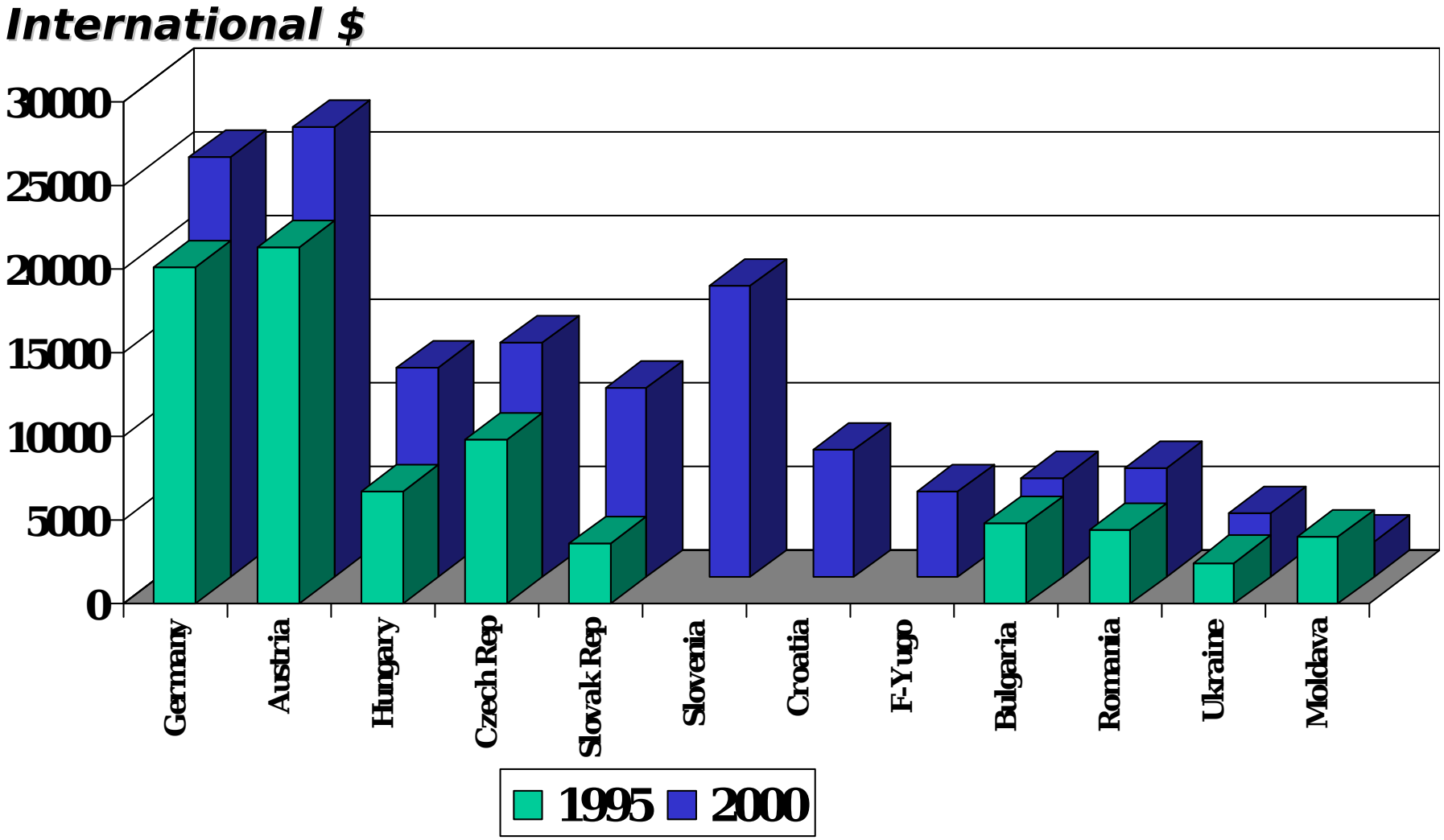


SOURCE: World Resources 2002-2004

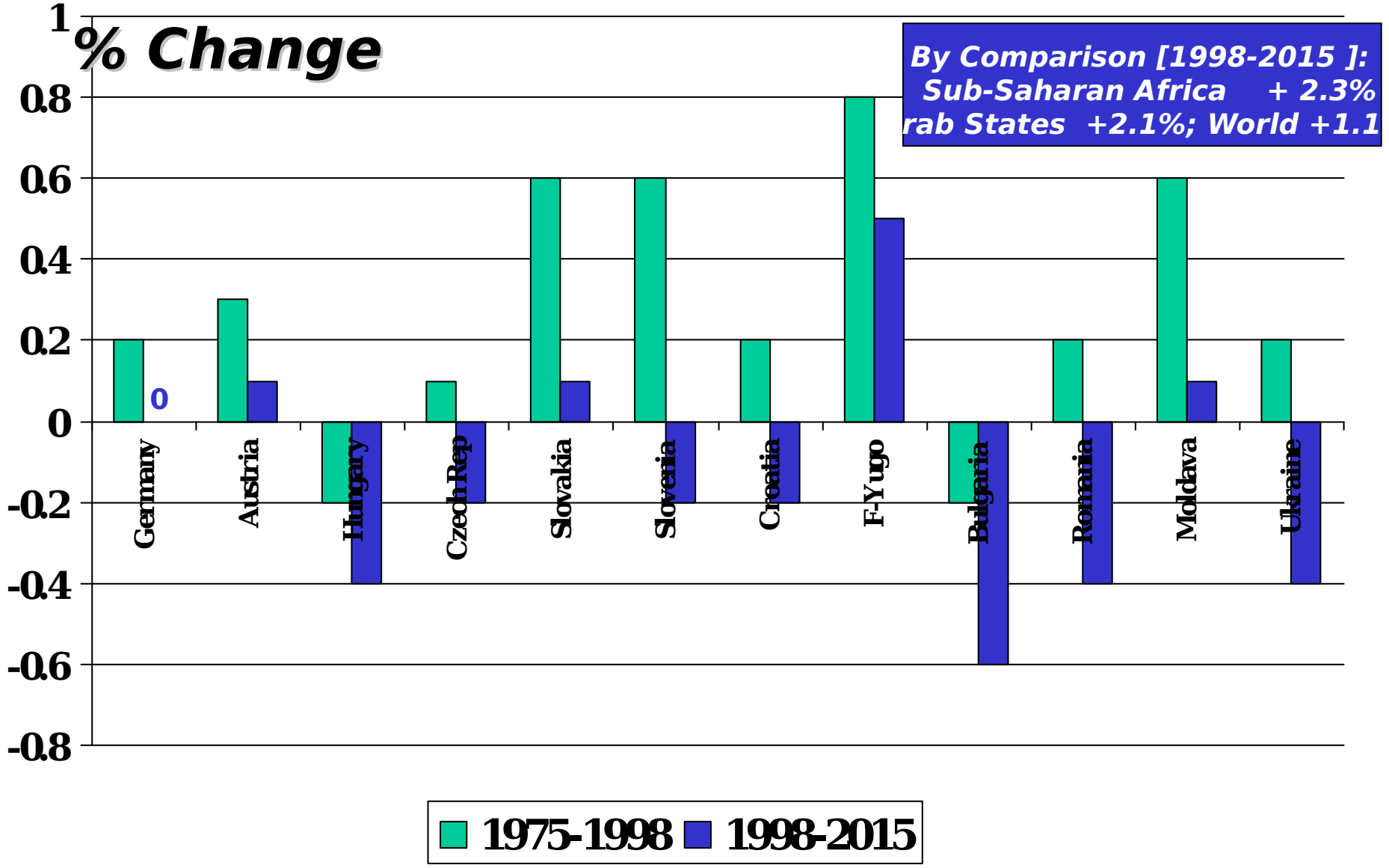
* ***Thousand of metric tons of oil equivalent (toe) per million of international dollars for all economic sectors***

Economic Transition

GDP per capita converted to international dollars using Purchasing Power Parity (PPP) rates

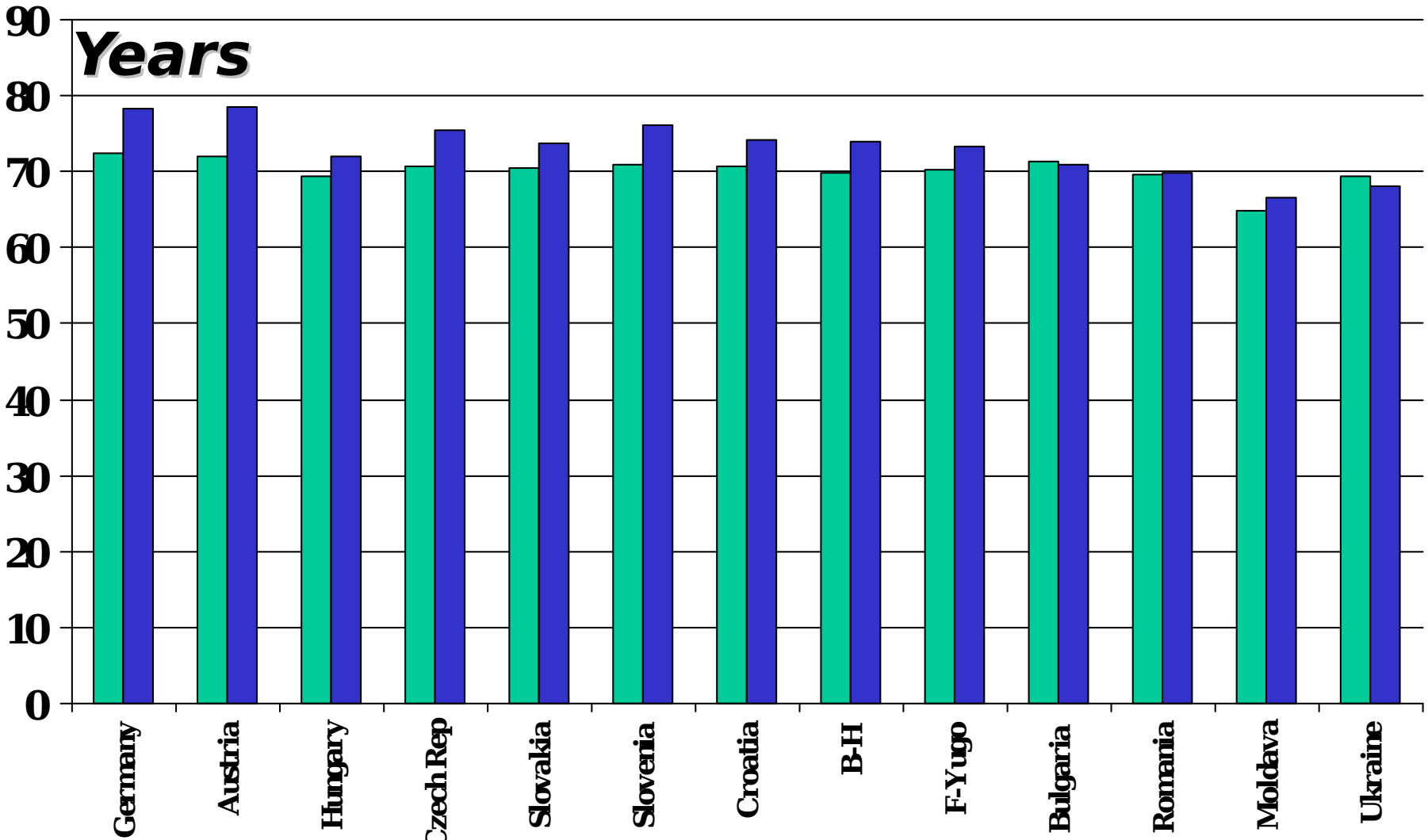


Demographics - Population Growth



Source: Human Development Report 2000, United Nations Development Program (UNDP)

Demographics - Life Expectancy at Birth



Source: World Resources 1998-1999
and World Resources 2002-2004.

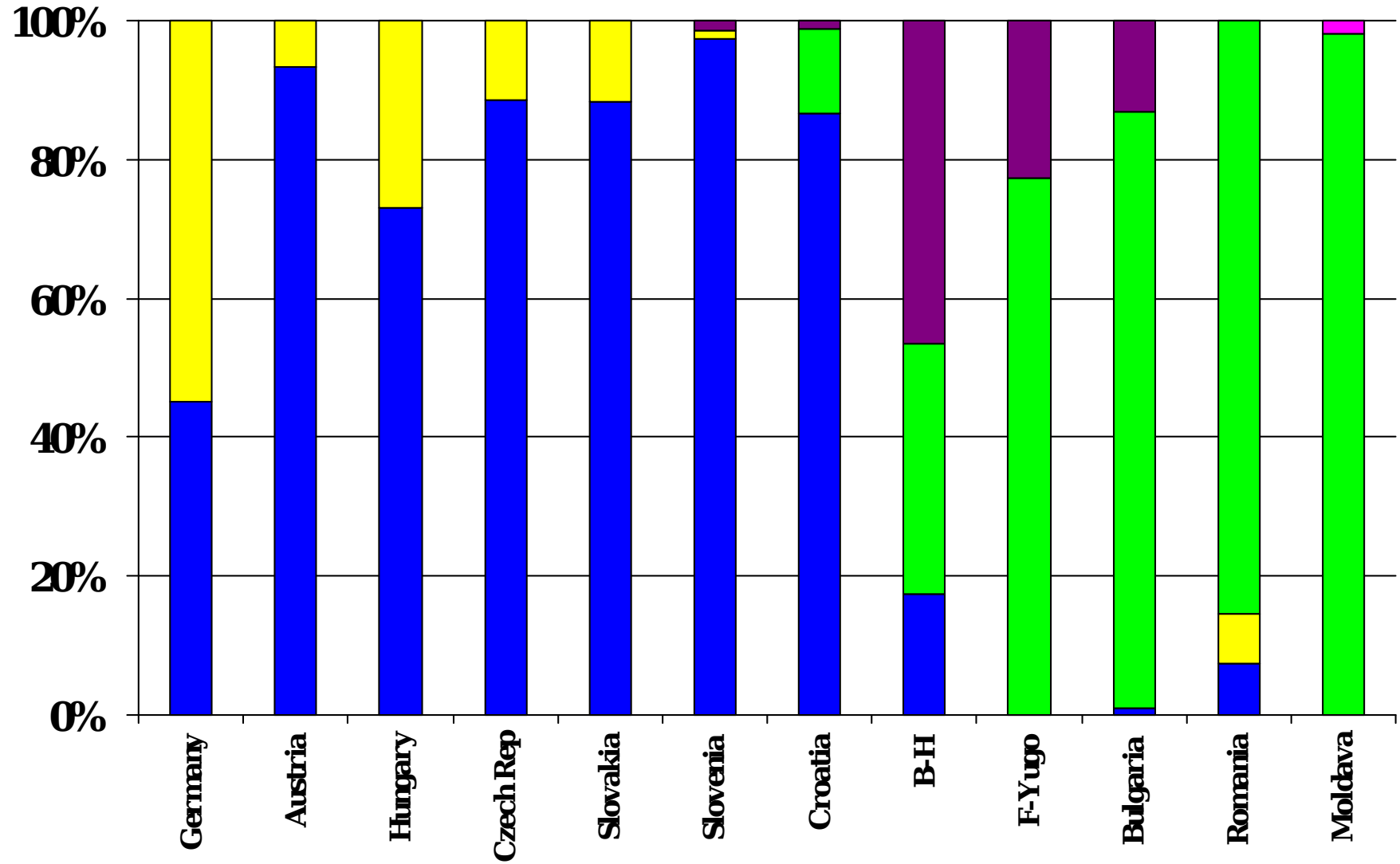
Source: Atlas de l'oche, Philippe Rekacewicz, Editions du Livre de l'oche, Paris, 1996.

UNEP

The Balkan Region and the Danube Basin

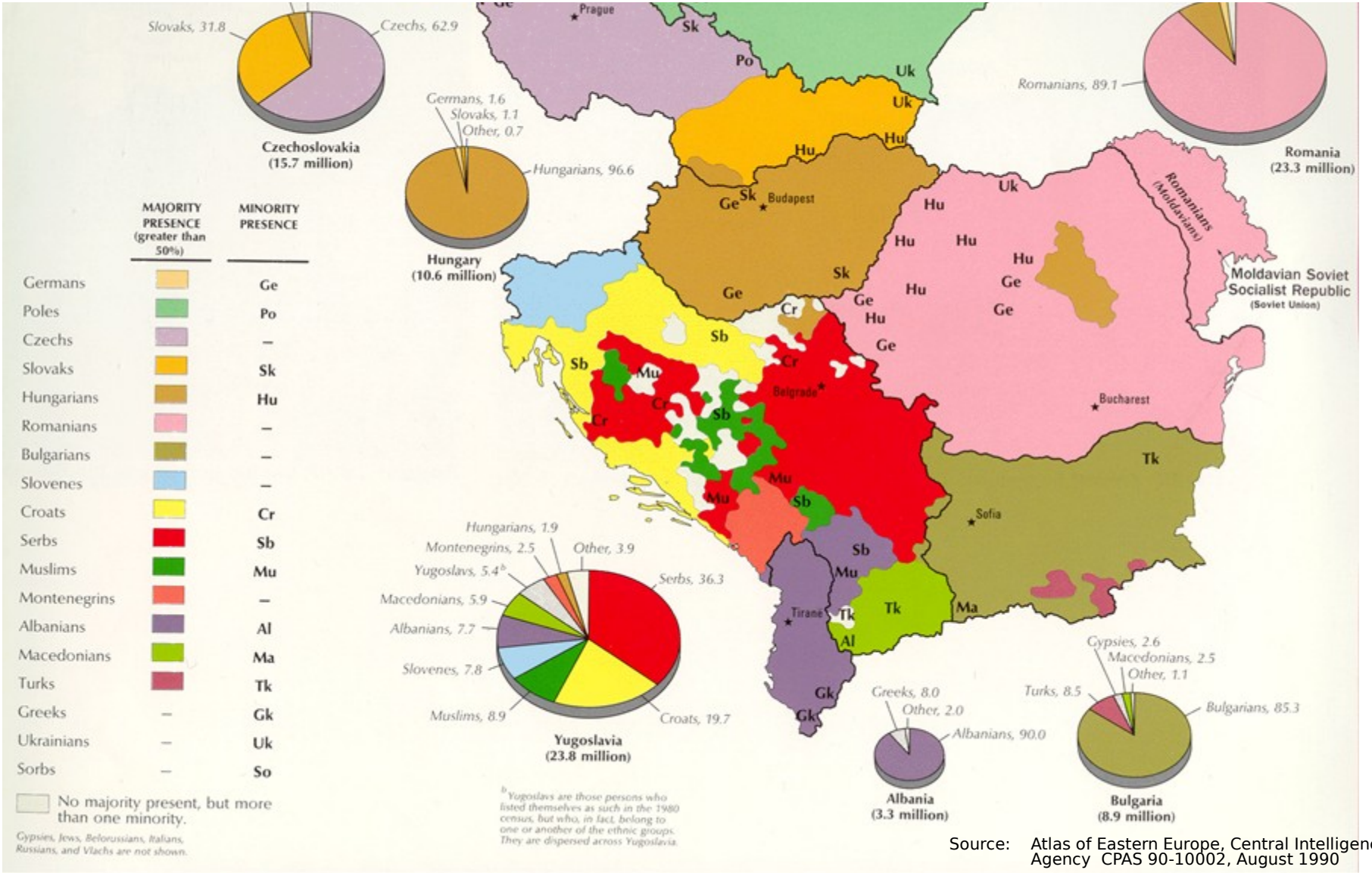
MAP (1)

Demographics - Major Religions



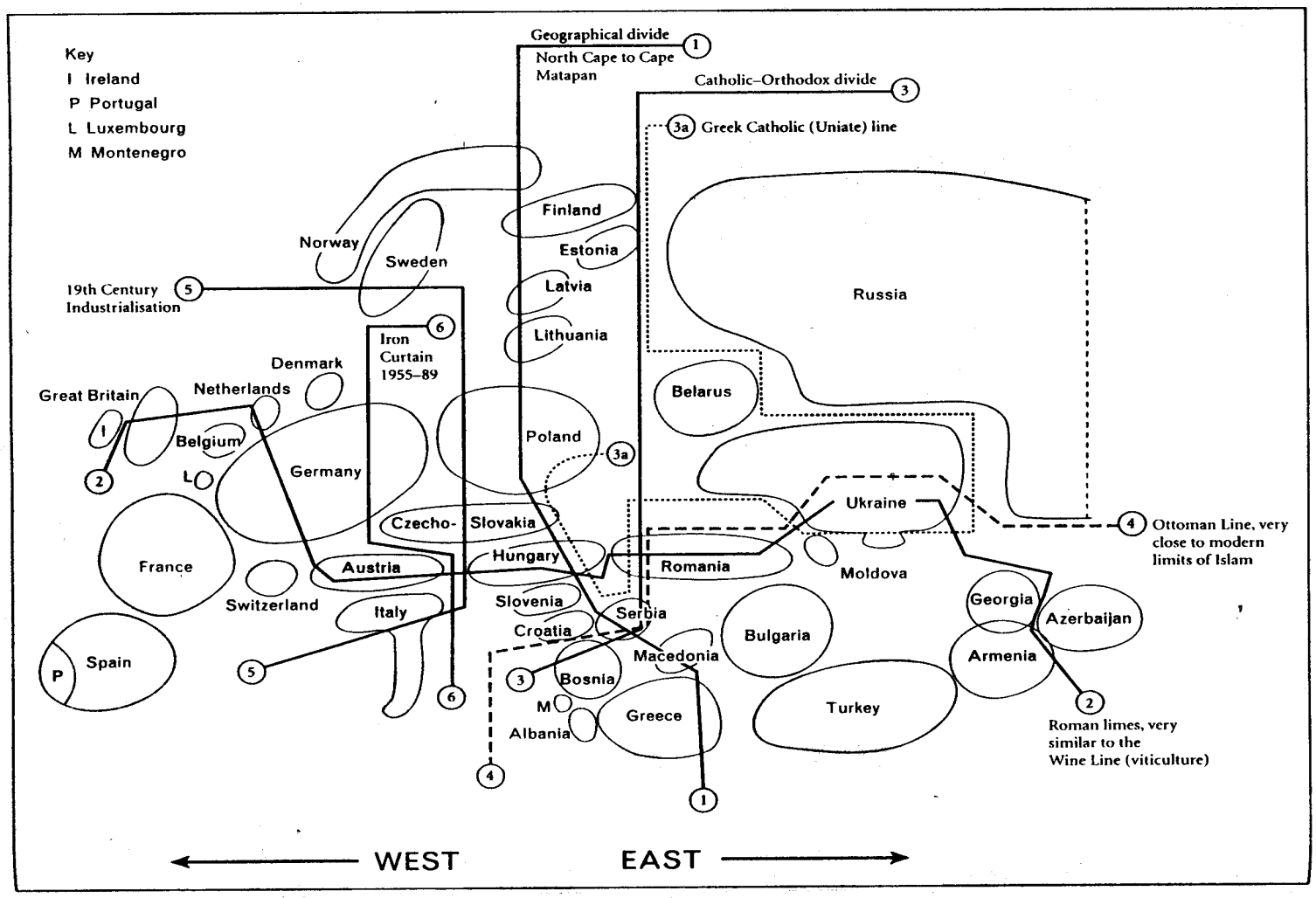
SOURCE: Wright, 1997

Demographics - Ethnic Composition
in 1990 - % Total Population



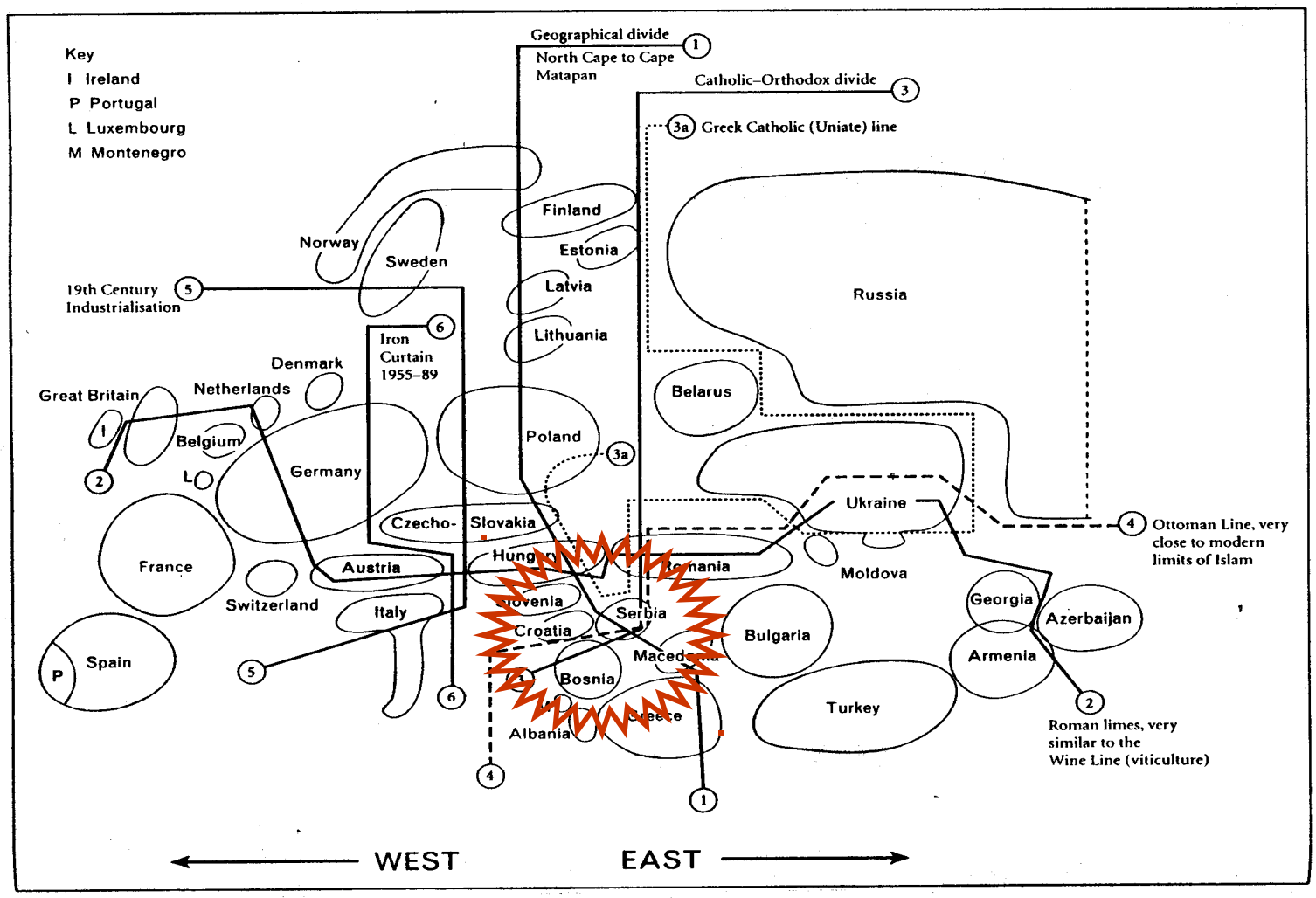
Source: Atlas of Eastern Europe, Central Intelligence Agency CPAS 90-10002, August 1990

Cultural and Historic Fault lines



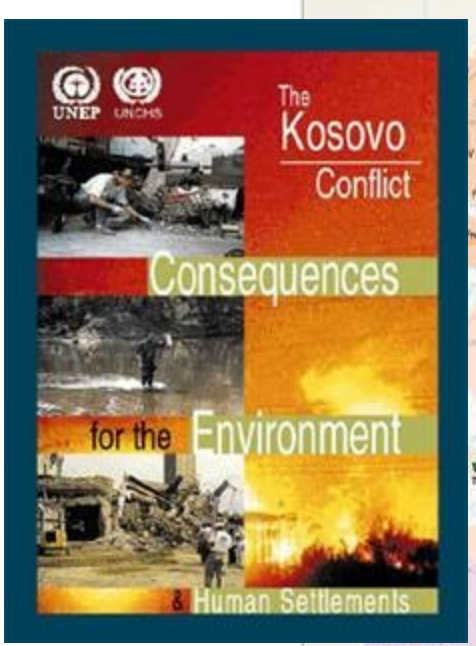
Source: Europe: A History by Norman Davies, copyright 1993 by Norman Davies, reproduced by permission of Oxford University Press, Inc.

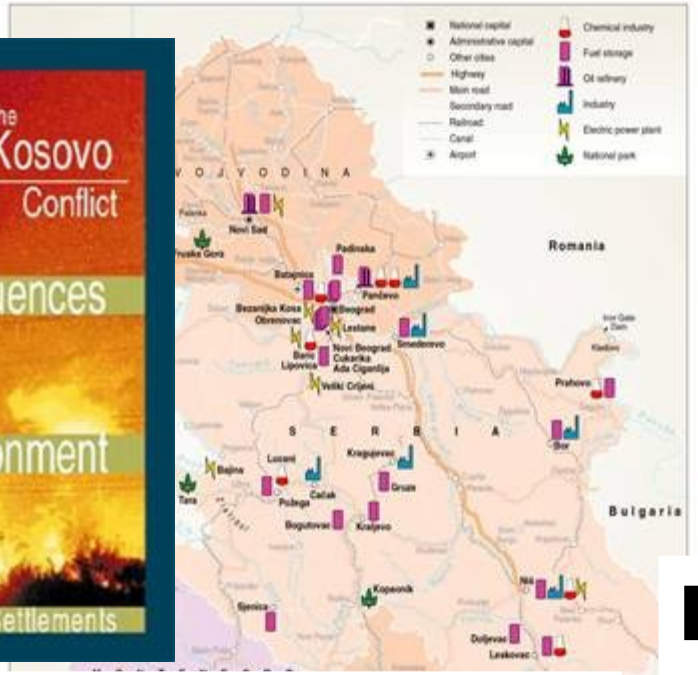
Confluence of Major Fault Lines

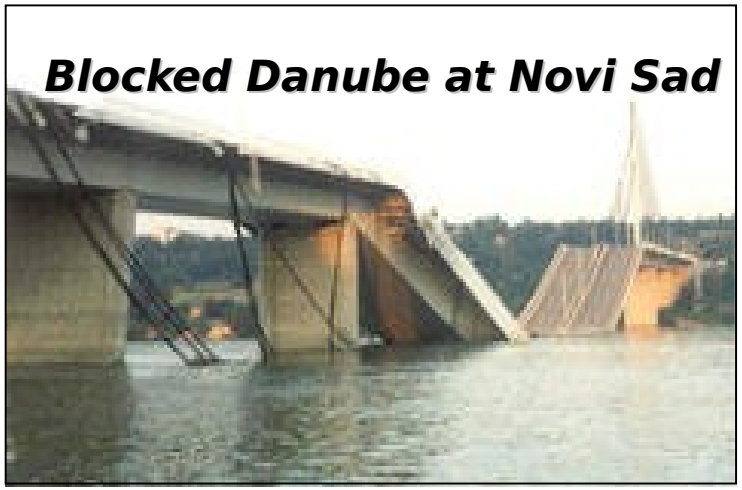


Source: Europe: A History by Norman Davies, copyright 1993 by Norman Davies, reproduced by permission of Oxford University Press, Inc.

Environmental Assessments
Balkan Conflict







UN Balkans Task Force
http://www.grid.unep.ch/btf/
http://postconflict.unep.ch/

Regional Env Center
[prepared for EC DG-XI]
http://www.rec.org/REC/Announcements/yugo/exec_sum.html

NATO and EU Enlargement - 2004

Evolving Security and Economic Arrangements

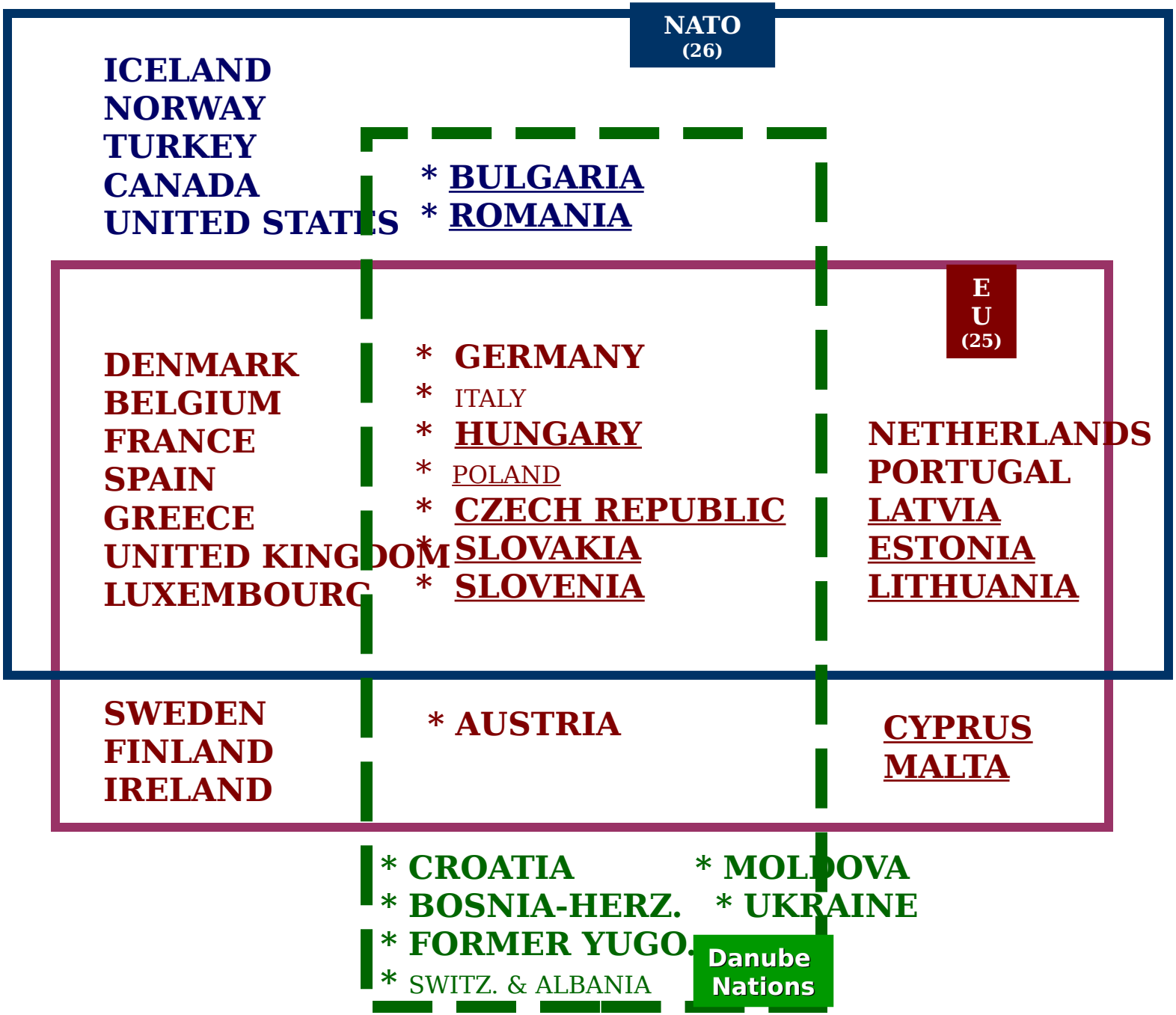
NATO (26)

ICELAND
NORWAY
TURKEY
CANADA
UNITED STATES
BULGARIA
ROMANIA

EU (25)

DENMARK
BELGIUM
FRANCE
SPAIN
GREECE
UNITED KINGDOM
LUXEMBOURG
GERMANY
ITALY
HUNGARY
POLAND
CZECH REPUBLIC
SLOVAKIA
SLOVENIA
NETHERLANDS
PORTUGAL
LATVIA
ESTONIA
LITHUANIA

SWEDEN
FINLAND
IRELAND
AUSTRIA
CYPRUS
MALTA


NATO
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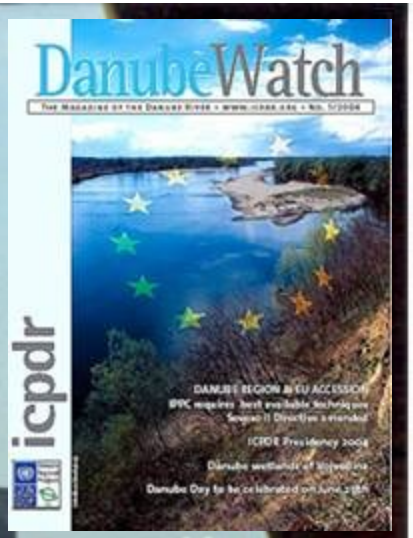
BELGIUM
FRANCE
SPAIN
GREECE
UNITED KINGDOM
LUXEMBOURG
* GERMANY
* ITALY
* HUNGARY
* POLAND
* CZECH REPUBLIC
* SLOVAKIA
* SLOVENIA
NETHERLANDS
PORTUGAL
LATVIA
ESTONIA
LITHUANIA
SWEDEN
FINLAND
IRELAND
* AUSTRIA
CYPRUS
MALTA
* CROATIA
* BOSNIA-HERZ.
* FORMER YUGO.
* SWITZ. & ALBANIA
* MOLDOVA
* UKRAINE
Danube
Nations

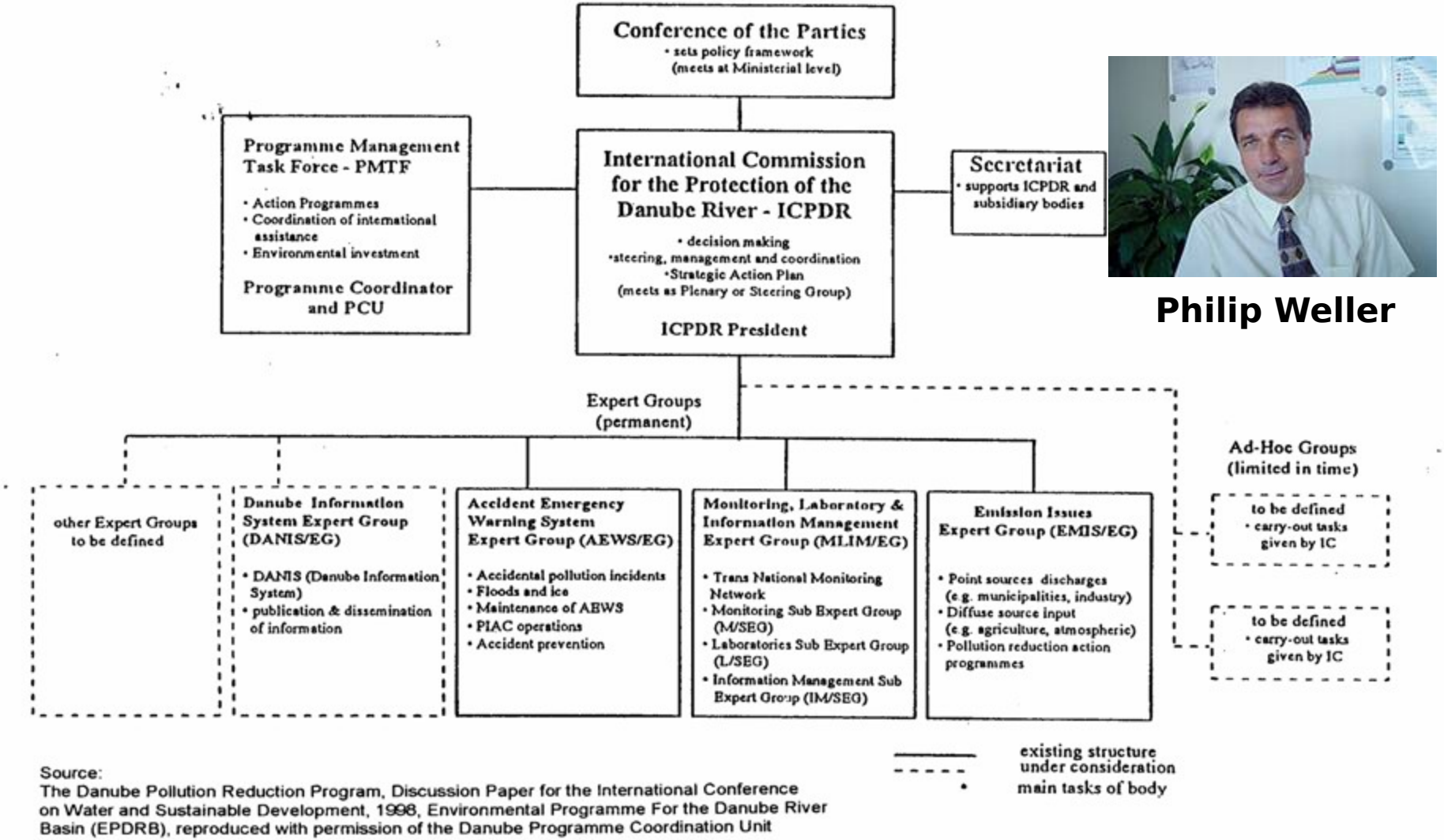
International Cooperation
Danube as a Cohesive Factor

Catherine Day, DG Env, EC
2004 President, ICPDR

CPDR Permanent Secretariat
Vienna International Center
Vienna / Austria
http://www.icpdr.org



Danube Convention Organization
International Commission (ICPDR)


Conference of the Parties
• sets policy framework
(meets at Ministerial level)
Programme Management Task Force - PMTF
• Action Programmes
• Coordination of international assistance
• Environmental investment
Programme Coordinator and PCU
International Commission for the Protection of the Danube River - ICPDR
• decision making
•steering, management and coordination
•Strategic Action Plan
(meets as Plenary or Steering Group)
ICPDR President
Secretariat
• supports ICPDR and subsidiary bodies
Expert Groups (permanent)
other Expert Groups to be defined
Danube Information System Expert Group (DANIS/EG)
• DANIS (Danube Information System)
• publication & dissemination of information
Accident Emergency Warning System Expert Group (AEWS/EG)
• Accidental pollution incidents
• Floods and ice
• Maintenance of AEWS
• PIAC operations
• Accident prevention
Monitoring, Laboratory & Information Management Expert Group (MLIM/EG)
• Trans National Monitoring Network
• Monitoring Sub Expert Group (M/SEG)
• Laboratories Sub Expert Group (L/SEG)
• Information Management Sub Expert Group (IM/SEG)
Emission Issues Expert Group (EMIS/EG)
• Point sources discharges (e.g. municipalities, industry)
• Diffuse source input (e.g. agriculture, atmospheric)
• Pollution reduction action programmes
Ad-Hoc Groups (limited in time)
to be defined
• carry-out tasks given by IC
to be defined
• carry-out tasks given by IC
existing structure
under consideration
main tasks of body

Philip Weller

Source:
The Danube Pollution Reduction Program, Discussion Paper for the International Conference on Water and Sustainable Development, 1998, Environmental Programme For the Danube River Basin (EPDRB), reproduced with permission of the Danube Programme Coordination Unit

http://www.icpdr.org/pls/danubis/danubis_db.dyn_navigator.show

International Agreements/Events

Crimean War

WW I

WW II

Cold War Era

Balkan Conflicts

Post 1989

- ineffective
- **Treaty of Bucharest 1917**- Central Powers replaced commission
- **Treaty of Versailles 1919** - international status; revived commission
- Nazi Germany control of shipping - substituted a Danube Committee
- Proposals by U.S. to reopen Danube **-** ignored until mid-1946
- **Belgrade Convention 1948** - Danube Commission [navigation/safety]
- **Vienna Treaty 1955** - free navigation for all commerce and goods
- **Bucharest Convention 1958** -improve breeding and migration of fish
- **Bucharest Declaration 1985** - data collection; Ecological Commission
- 20,000 demonstrate [human chain] in Budapest against GNP - 1988
- Environmental Action Program (EAP) for CEE [Dobris Ass.] - 1991
- Danube nations and donor agencies meet in Budapest - 1991
- Environmental Programme and work plan for Danube Basin - 1992
- Gabcikovo hydroelectric dam and Danube-Main canal open - 1992
- **Danube River Protection Convention 1994** (ratified 98)

International Cooperation

- **UNITED NATIONS:**
  - Global Environmental Facility - significant contributions in staffing and funding the earlier ***Danube Programme Coordination Unit*** w/EC provide interim program oversight; 4-per. GEF env. and financial team
  - International Court of Justice - conflict resolution, e.g., Gabcikovo da
  - International Atomic Energy Agency (IAEA) - provides nuclear power plant safety assistance to CEE countries and Russia
  - World Bank - promotes sustainable development; supported Danube Environmental Programme and program's Strategic Action Plan

- **EUROPEAN COMMISSION:**
  - *Danube Programme Coordination Unit* - jointly staffed with UN; dut transferred to ICPDR once Danube convention in force; 6-per. *PHARE te*
  - PHARE/TACIS - technical and financial assistance to CEE and CIS natio
  - ***Environmental Action Program Program*** for Central and Eastern Eu

- **ORGANIZATION ECONOMIC CO-OP & DEVELOPMEN**
  - Nuclear Energy Agency - assisting CEE nations with nuclear safety
  - Secretariat of *Environmental Action Program* (EAP) Task Force for CEE

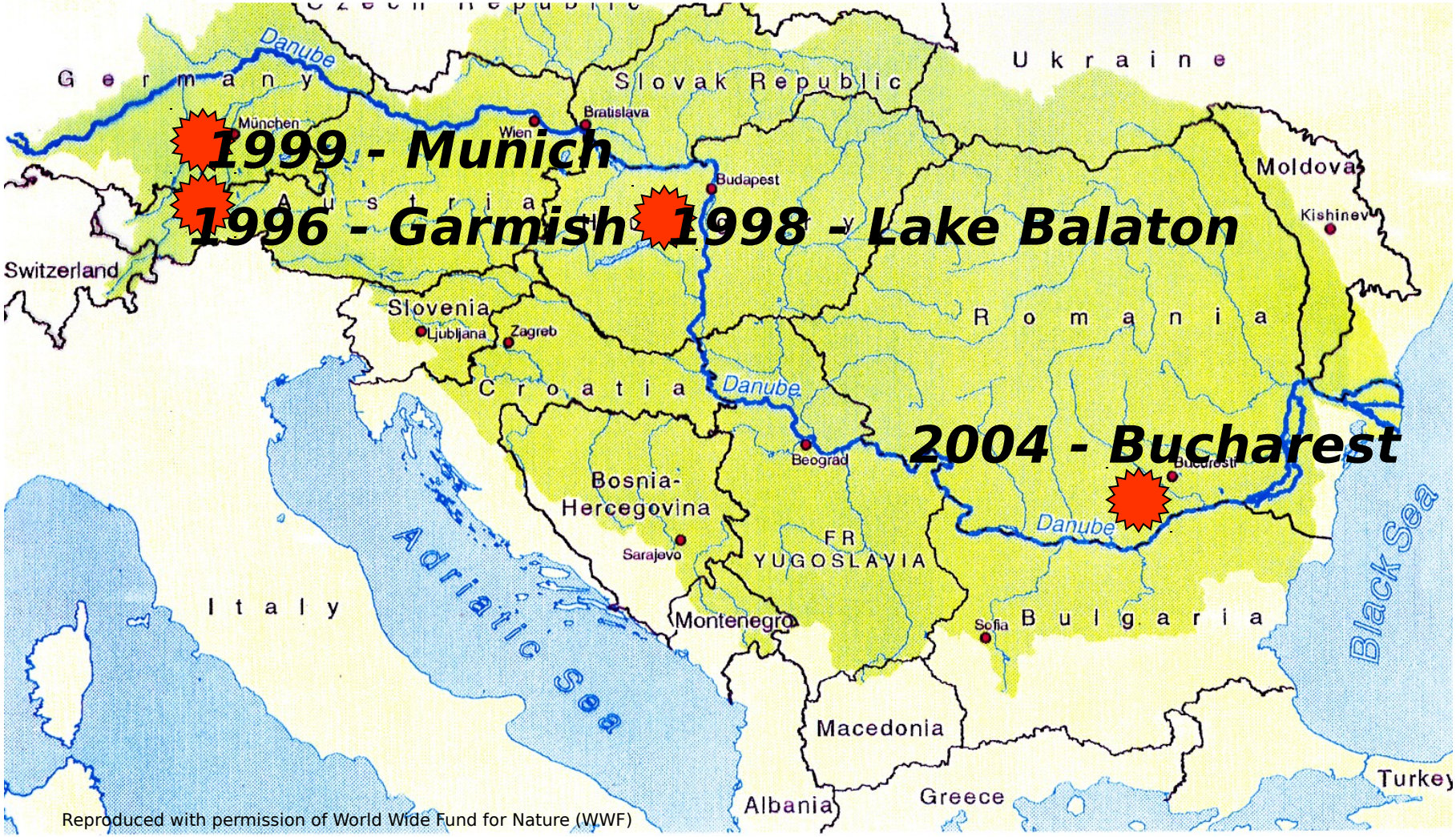
International Cooperation (Cont.)

- **NON-GOVERNMENT ORGANIZATIONS (NGOs)**
  - Regional Env Center (REC) - est. as non-profit by HU, US, and EC in 1
    Danube Pollution Reduction Program; facilitated regional/national meeti
    administered the *UNDP/GEF's Danube Small Grants Program*
  - World Wide Fund for Nature (WWF) - *Green Danube Program* to rest
    and protect threatened biodiversity - prioritized projects, e.g., restore we

- **NATO:**
  - Committee on the Challenges of Modern Society (CCMS) - pilot st
    into reuse and environmental cleanup of former military installations in
    and FSU; Black Sea support, e.g., modeling, focasting ecosystem vulnera
  - Supported earlier work on Danube Basin Information Network (DBI
  - Funded workshop for Danube nations to review data and information sh

- **UNITED STATES:**
  - Env Protection Agency - established REC w/HU and EC; provided tech
    assistance to region, w/EC opened P2 centers in Czech Rep. and Poland
  - USAID - member of Danube Task Force; *Danube Emissions Managem*
    Management Support System in 4 tributaries; supported *Environmental*
    Program for CEE; U.S. *Support for Eastern European Democracy (SEED)*
  - Dept of Energy - *Soviet-Designed-Reactor*-[operational] *Safety Progra*

PfP Environmental Conferences Hosted in Danube Basin Nations



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